

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSTRUCTION SPECIFICATION**

**IA-32 CONCRETE FOR NONSTRUCTURAL SLABS**

**1. SCOPE**

The work shall consist of forming, placing, finishing, and curing Portland cement concrete slabs including steel reinforcement.

**2. MATERIALS**

Cement shall be Type I or Type II Portland cement. Aggregate shall meet Iowa Department of Transportation requirements for Coarse and Fine Aggregate for Concrete, Sections 4110 and 4115 of IDOT Standard Specifications for Highway and Bridge Construction. Water shall be clean and free of harmful chemicals. Reinforcing steel shall be deformed billet-steel bars, Grade 40 or 60. Welded wire fabric shall conform to the requirements of ASTM A 185.

**3. CONCRETE MIX**

The concrete mix shall provide a minimum strength of 3500 psi at 28 days. The mix shall contain not less than 6 sacks of cement per cubic yard and not more than 6 gallons of water per sack of cement. The water/cement ratio shall not exceed 0.53:1 including free water in the aggregates. Air entrainment shall range from 4% to 8%. Slump shall be 2" to 5".

The contractor shall be responsible for determining the design mix proportions and shall provide a copy of the mix to the NRCS Inspector at least 3 days prior to placing any concrete. A concrete batch ticket shall be supplied to the inspector at the time of delivery to the site. The minimum information to be included shall be the name of the supplier, size of load, time of loading, type and amount of cement, type and amount of admixtures, saturated surface dry weights of fine and coarse aggregate, mixing water added at the plant and free water in aggregates.

**4. REINFORCING STEEL**

Reinforcing steel shall be free from loose rust, concrete, oil, grease, or paint.

Reinforcing shall be accurately placed and secured in position in a manner that will prevent its displacement during placement of concrete. The use of heat or welding in cutting, bending and splicing of reinforcing steel will not be permitted.

In slabs, steel shall be supported by precast concrete bricks, corrosion resistant metal chairs, or non-metal chairs. The concrete brick shall have strength equal to or greater than 3500 psi. Metal chairs shall have a protective epoxy coating, plastic coating, galvanized finish or be stainless steel.

Splices of reinforcing bars shall be lapped 30 diameters but not less than 12 inches. Bars shall not be spliced by welding. Welded wire fabric shall be lapped at least one mesh width.

## **5. FORMS FOR CONCRETE**

All edges shall be formed. All forms shall be true to line and grade, mortar tight, and rigid. Forms shall be left in place for a minimum of 24 hours.

## **6. PLACING CONCRETE**

Concrete shall be placed in final position within one and one-half hours after mixing the aggregate with cement and shall be consolidated by spading or mechanical vibration. The concrete shall not be forced to flow laterally to its final location. Concrete shall not be dropped more than 5 ft. vertically.

Addition of water at the job site may be done at the beginning of placement of each load of concrete in order to obtain allowable slump, provided that the specified water/cement ratio will not be exceeded. Addition of water will not be permitted after placement of the load has proceeded.

All concrete placed on earth shall be placed on clean firm damp surfaces, free of frost, ice, running water, or mud.

Concrete shall be placed at air temperatures between 40°F and 80°F, unless special measures are taken to protect the concrete. Review special concrete placement procedure with NRCS prior to placement of concrete. Concrete shall be protected from freezing for 7 days after placement.

## **7. JOINTS**

Install joints as shown on the drawings. A formed construction joint shall be made at the locations shown on the drawings, at the end of the day or at any time when a cold joint would occur.

Control joints are required every 8 to 12 ft. in both directions, unless otherwise shown on the drawings. They shall be tooled or sawed to a depth of 1/4 of the slab thickness.

## **8. CURING CONCRETE**

Concrete shall be cured for 7 days by either:

- 1) Applying white pigmented curing compound at a rate of 1 gallon per 150 square feet or as recommended by the manufacturer.
- 2) Water soak exposed surface for the entire 7 days.
- 3) Cover with burlap, mats or other material and maintain in a moist condition.
- 4) Cover with 4 mil plastic sheeting while concrete is still wet.

## **9. SPECIAL SPECIFICATIONS**